



THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
VILLAGE OF CHESTERVILLE
COUNTY OF DUNDAS

1965

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ONTARIO WATER
RESOURCES COMMISSION

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THE
ONTARIO WATER RESOURCES
COMMISSION
Report on a
WATER POLLUTION SURVEY
of the
VILLAGE OF CHESTERVILLE
in the
COUNTY OF DUNDAS

Division of Sanitary Engineering
October 1965



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WATER POLLUTION SURVEY
of the
VILLAGE OF CHESTERVILLE

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WATER POLLUTION SURVEY

VILLAGE OF CHESTERVILLE

INTRODUCTION

A water pollution survey of the Village of Chesterville was performed during the month of July, 1965. Surveys of this type are performed by the Ontario Water Resources Commission for the purposes of locating and recording sources of existing and potential water pollution. Recommendations are made concerning the abatement of these sources to the parties concerned.

In this report, reference is made to various other surveys conducted by the Commission. Certain sample results obtained during these surveys are also tabulated. The appendices to the report are a tabulation of laboratory results of samples collected from storm sewer outfalls, industrial waste outfalls and surface waters, and a map of the Village of Chesterville showing the sample point locations.

OFFICIALS CONTACTED

Assistance was received from the following officials:

Mr. L. R. Marcellus, Clerk;
Mr. H. Sharkey, Works Superintendent;
Mr. W. McPhail, Works Foreman;
Mr. C. Sizer, Water Works Operator;
Mr. J. A. Mullineux, Chief Health Inspector, Stormont,
Dundas and Glengarry Health Unit.

PREVIOUS SURVEY AND RECOMMENDATIONS

During May of 1962, investigations and inquiries were made in the village with respect to any conditions within the village which would affect the quality of the waters in the South Nation River. The survey revealed that inadequately treated sewage flows were gaining access to the waters of the South Nation River, and noted that the need for municipal sanitary sewers and sewage treatment works was obvious.

THE VILLAGE OF CHESTERVILLE

General

The Village of Chesterville is located on Highway 43 near the eastern boundary of the County of Dundas. The South Nation River flows easterly through the centre of the village. According to the 1965 Municipal Directory, Chesterville's population is 1,296.

The South Nation River

The South Nation River is a large watershed lying between the municipalities of Ottawa and Hawkesbury on the Ottawa River, and Brockville on the St. Lawrence River. The drainage area is approximately 1,511 square miles.

The main stream rises in the County of Leeds north of the City of Brockville, and flows generally in a north-easterly direction to its mouth at the Ottawa River near the community of Wendover. Approximately 58 miles from the mouth, it flows

CHESTERVILLE.

through the Village of Winchester. A control dam located near the downstream end of the municipality is operated by the Nestle (Canada) Limited plant. The purpose of the dam is to control upstream water levels in order to ensure an adequate supply for plant operations. The river waters are used to some extent for swimming and fishing.

Water Supply

Chesterville's municipal water works system went into operation in January, 1961. It was constructed and financed as an OWRC project, and it is operated by the village under the supervision of the Division of Plant Operations, OWRC. Water is obtained from two wells, one of which is maintained for standby purposes. Chlorination treatment is provided.

Surface Water Drainage

Surface waters are carried to the South Nation River through natural and improved drainage courses and the municipal storm sewers.

It is evident that some private sanitary waste connections to the storm sewer system exist. The main storm sewer in the community runs along the river bottom near the north bank of the watercourse and terminates at the above mentioned dam. Contaminated flows are conducted by this sewer to the downstream location where they are apparently less objectionable to the community. During the 1962 survey, it was evident that this

conduit had become defective, since clouding of the river water at various locations indicated that the wastes were being released to the river throughout its course.

Sewage Disposal

In the absence of municipal sanitary sewers, private methods of sewage disposal are employed. New installations of sewage disposal facilities are conducted under the supervision of the local health unit. However, there are numerous premises where, due in part to the lack of space for the construction of adequate systems, unsatisfactory methods are employed. These may be in the form of sanitary waste connections to local storm sewers or private outfalls to the river. Sewage disposal problems of this nature exist at the two local hotels. Numerous intermittently discharging small sewer outlets along the river banks indicate the common practice of directing untreated or inadequately treated sewage flows to the watercourse.

Due to the difficulty in locating the many individual instances of private wastes being discharged to the storm sewers, and due to the fact that it is generally felt that the municipal sewage works facilities will be available within a few years, officials are reluctant to attempt to have corrections made on a private basis.

Industry

Chesterville's principal industrial firm is Nestle (Canada) Limited. The products manufactured at this plant include powdered whole milk, condensed milk, instant coffee, instant chocolate drink, and instant fruit drinks.

Process wastewater and sanitary wastes are discharged to a storm sewer which outfalls to the South Nation River. Some of the process wastes and the sanitary wastes are directed to a septic tank prior to their discharge to the river. The total daily waste flow is estimated to be 680,000 gallons.

Numerous complaints have arisen in the past as a result of the pollution effect of this waste on the South Nation River; however, the provision of adequate waste disposal facilities to serve this plant is presently under active consideration.

The Chesterville Dairy, located on Main Street North, produces approximately 2,500 quarts of milk per day on a five-day week basis. The municipal water supply is utilized. The plant does not contain sanitary waste facilities. Industrial wastes, including cooling water, wash waters, and milk spillages, estimated to be approximately 500 gallons per day, are discharged to a septic tank and thence to a municipal storm sewer which extends along Main Street.

Cooling waters from Abel's Dry Cleaning plant are discharged to a municipal storm sewer.

Refuse Disposal

The refuse disposal site is located on the north side of the South Nation River approximately one quarter mile east of the village. Refuse and garbage are dumped over an excavated area and burned and covered from time to time with clean fill. At the time of the investigation, the disposal area had been covered and compacted to within 300 feet of the river. There was no evidence of leachate flowing from the disposal site to the river at the time of the investigation.

SAMPLING PROCEDURE

Samples were collected from the South Nation River and from any evident discharges thereto, and submitted to the Ontario Water Resources Commission Laboratory for bacteriological examination and sanitary chemical analyses. Seasonal weather conditions prevailed during the survey with no precipitation occurring during the week.

INTERPRETATION AND SIGNIFICANCE OF LABORATORY RESULTS

The analyses employed to determine the quality of samples are: biochemical oxygen demand (BOD), solids, and the enumeration of coliform organisms.

The BOD of sewage, industrial wastes, or polluted waters, is the oxygen required during stabilization of the decomposable organic or chemical material by aerobic biochemical action. A five-day BOD determination with incubation at 20° Centigrade is

reported. A high BOD is indicative of organic or chemical pollution. The BOD of a watercourse should not exceed 4 parts per million (ppm).

The analyses for solids include tests for total, suspended, and dissolved solids. The results are reported in parts per million. The first test measures both the solids in solution and in suspension. The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion, sewage, and industrial wastes are significant sources of suspended solids. Suspended solids in water can present difficulties associated with water purification and might result in depositions in streams which can interfere with the habitat of aquatic life. The dissolved solids are a measure of those solids in solution.

The coliform count is employed to obtain an enumeration of coliform organisms. The presence of coliforms indicates pollution by human or animal excrement or by some non-faecal forms. It is the opinion of the OWRC that the presence of coliforms in a watercourse should not exceed 2,400 organisms per 100 millilitres (ml.). The membrane filter technique is utilized in testing for coliform organisms.

POLLUTION SOURCES INDICATED BY SAMPLE RESULTS

The sample results indicate a marked deterioration in the bacteriological quality of the river water as it flows

through the village. This can readily be seen by a comparison of the upstream and downstream results. At the upstream sampling points N 58.6 and N 59.0, coliform organisms within the Commission's objectives for surface waters were noted. The various samples collected downstream at the dam indicate fluctuating coliform counts, some of these being far in excess of the Commission's objectives. Further deterioration of the river water occurs as a result of the influence of the Nestle (Canada) Limited milk plant waste outfall. Very high BOD, solids and coliform contents are noted in the samples taken from this industrial waste discharge and in the samples downstream from the discharge.

On the basis of the sample results, the following specific pollution sources are noted.

Municipal Storm Drains

High BOD, solids, and coliform contents indicate the presence of domestic sanitary wastes in the following storm sewer discharges.

Sample
Point No.

Description of Sampling Point

N 58.2W	Submerged storm sewer outfall to the South Nation River at the foot of Casselman Street.
N 58.32W+(N)	Submerged storm sewer outfall to the north bank of the South Nation River near the intersection of Main and Queen Streets

<u>Sample Point No.</u>	<u>Description of Sampling Point</u>
N 58.47 D	Collector ditch draining to South Nation River at the foot of Francis Street - collects from ditch and Francis Street storm sewer
N 58.53 W	Sewer outfall to South Nation River at the foot of College Street

Industrial

Sample point number N 58.7 I is the industrial waste outfall from Nestle (Canada) Limited to the South Nation River. The sample results indicate this waste to be a source of pollution to the South Nation River. A further indication of the gross polluting nature of this waste is the BOD and suspended solids loadings on the receiving waters, estimated by the Division of Industrial Wastes of this Commission to be 2,500 and 4,000 pounds per day, respectively.

SUMMARY

Pollution of the South Nation River within the Village of Chesterville is occurring as a result of contaminated discharges from storm sewers, ditches, and private outfalls to the watercourse. Just east of the municipal limits, serious pollution is resulting from the Nestle (Canada) Limited industrial waste discharge.

The municipality does not have definite plans regarding sewage works at the present time. Revised waste disposal procedures are being actively considered at the Nestle (Canada) Limited plant.

RECOMMENDATIONS

Every effort should be made by the municipality to realize the establishment of sewage works at the earliest possible date.

Industrial waste disposal procedures at the Nestle (Canada) Limited plant should be revised to ensure that the industrial waste will not be discharged to the South Nation River or that it will be adequately treated prior to its discharge thereto.

The possibility of a joint sewage disposal project between Nestle (Canada) Limited and the municipality could be considered.

All of which is respectfully submitted,

District Engineer:


J. K. Theil

Approved by:

J. R. Barr, Director,
Division of Sanitary Engineering.

Prepared by: M. M. Holy

/mh

VILLAGE OF CHESTERVILLE

SAMPLE RESULTS

Sample Point No.	Description of Sampling Point	Date	M.F.	5-Day BOD	S O L I D S		
			Coliforms per 100 ml.		Total	Susp.	Diss.
N 57.9	South Nation River approxima- tely 1500 ft. downstream from Nestle Milk plant waste out- fall	May 9/62	57,000	38	370		
		July27/65	114,000,000	290	630	109	523
		Aug.27/65		12	392	21	371
N 57.8 I	Industrial waste outfall from Nestle (Canada) Limited to South Nation River	May 9/62	45,000,000	145	516	94	422
		May 13/65 (half hourly composite sample)		404		636	
		July27/65	460,000,000	550	1352	664	688
N 57.81	Approximately 150 ft. upstream from Nestle - Industrial waste outfall to South Nation River	May 9/62	227,000	1.4	284		
		July27/65	120	1.2	294	4	290
N 58.0	South Nation River at Chesterville dam	May 9/62	19,000	1.4	280		
		Aug. 2/62	2,900,000				
		Oct. 1/63	1,030	1.7	278		
		Aug.11/64	9,000	1.7	302	2	300
		Dec. 1/64	2,500	2.3		7	
		July27/65	150	0.5	304	3	301
N 58.2 W	Submerged storm sewer outfall to South Nation River at the foot of Casselman Street	July27/65	4,600,000				
N 58.25-(1)	South Nation River at Hwy. 43 bridge - 1/3 distance from N. Bank	May 9/62	600	1.6	248		
		July27/65	480	0.8	262	5	257

Sample Point No.	Description of Sampling Point	Date	M.F.	5-Day	S O L I D S		
			Coliforms per 100 ml.	BOD	Total	Susp.	Diss.
N 58.25-(2)	South Nation River at Hwy. 43 bridge - 1/3 distance from S. bank	May 9/62	194	1.4	286		
		July 27/65	16,000	2.0	268	5	263
N 58.32 W (N)	Submerged storm sewer out- fall to the N. bank of the South Nation River near the intersection of Main & Queen Streets	July 27/65	53,000,000	130	888	99	789
N 58.32 W (S)	Submerged storm sewer out- fall to the S. bank of the South Nation River approx. 400 ft. west of Hwy. 43 bridge	July 27/65	insufficient flow for sampling				
N 58.38 W	Submerged storm sewer out- fall to South Nation River just west of Chesterville Hotel	July 27/65	insufficient flow for sampling				
N 58.47 D	Collector ditch draining to South Nation River at the foot of Francis Street - Collects Ward ditch and Francis Street storm sewer	July 27/65	340,000,000	380	1360	208	1152
N 58.53 W	Sewer outfall to South Nation River at the foot of College Street	May 9/62	51,000,000				
		July 27/65	insufficient flow for sampling				

<u>Sample Point No.</u>	<u>Description of Sampling Point</u>	<u>Date</u>	M.F. Coliforms per 100 ml.	5-Day BOD	<u>S O L I D S</u>		
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>
N 58.6	South Nation River west end of Chesterville - upstream from Francis Street	May 9/62	72	1.8	280		
		Aug. 2/62	1,800				
		Oct. 1/63	900	1.4	282		
		Aug. 11/64	150	2.8	312	4	308
		July 27/65	240	1.0	266	4	262
N 58.7-W	Submerged storm sewer out- fall South Nation River bet- ween Church Street and Victoria Street	July 27/65		NO FLOW			
N 59.0	South Nation River at the western village limits - upstream from Chesterville	July 27/65	32	0.8	296	5	291

HIGHWAY No. 43B

VILLAGE LIMIT

CON. IV

SOUTH

TWP. OF WINCHESTER

LEGEND

N-58.0 - SAMPLING POINT SHOWING STREAM AND MILEAGE

N-58.7 - STREAM AND MILEAGE AT OUTFALL
W - TYPE OF OUTFALL

D - DITCH
I - INDUSTRIAL SEWER
W - STORM SEWER

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF CHESTERVILLE
WATER POLLUTION SURVEY
1965

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